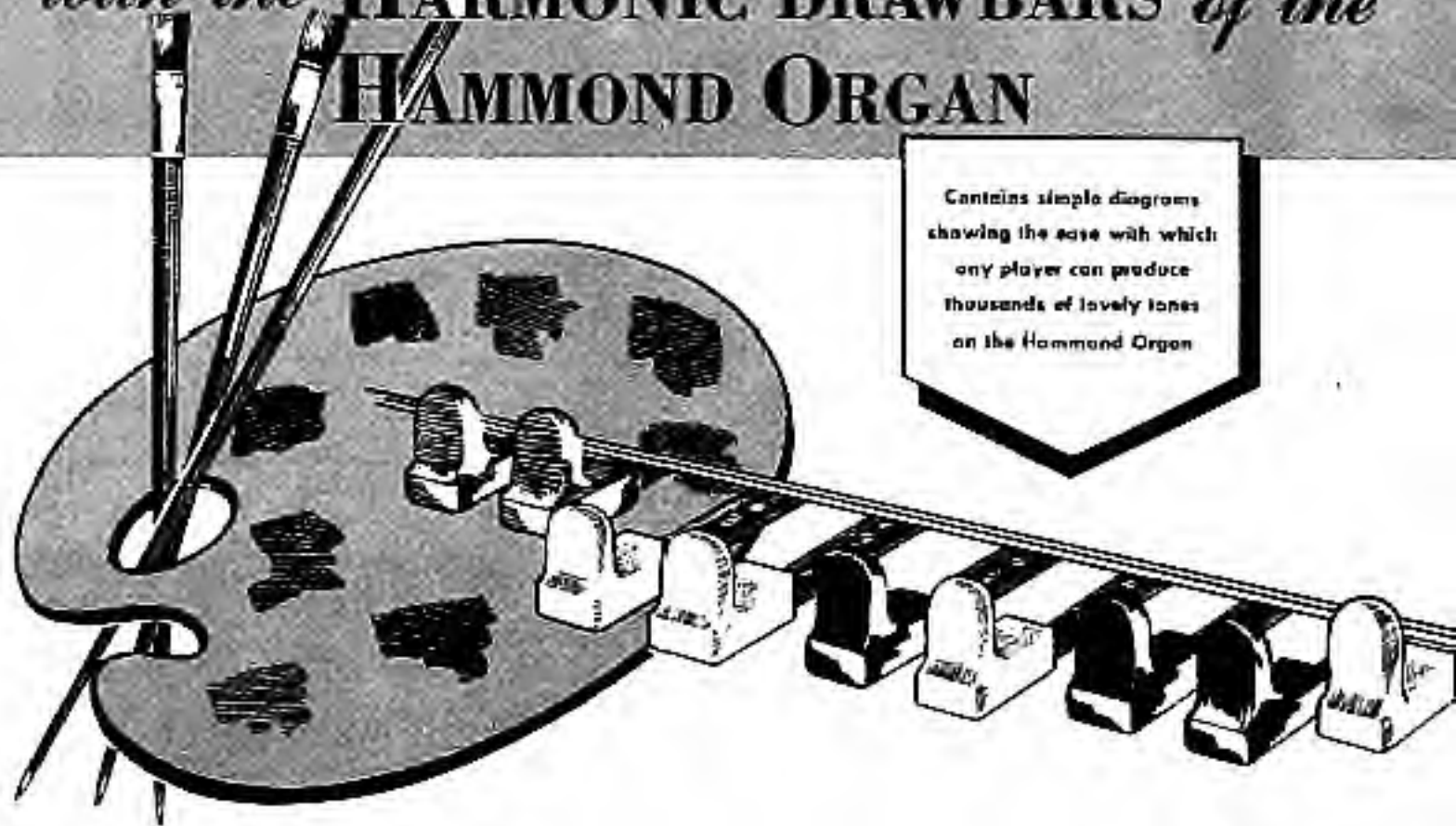
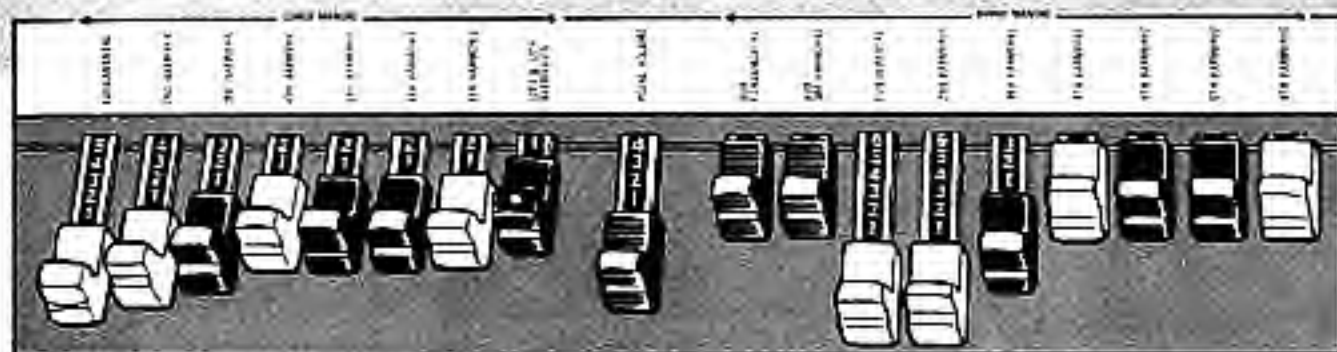


*Creating beautiful* **Stone colors**  
*with the* **HARMONIC DRAWBARS** *of the*  
**HAMMOND ORGAN**

Contains simple diagrams  
showing the ease with which  
any player can produce  
thousands of lovely tones  
on the Hammond Organ



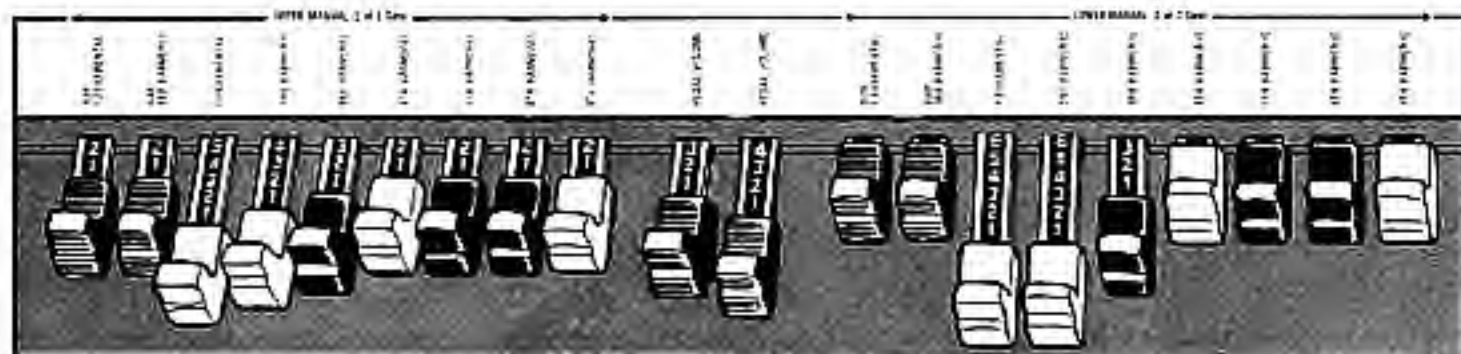


#### HARMONIC DRAWBARS on the Spinet Model (above)

As indicated in the above sketch, the first eight drawbars on this model are the "harmonic drawbars" which control the lower manual. Next is a single brown drawbar which controls the volume of the pedals. Finally, there is a set of nine harmonic drawbars which control the upper manual. The drawbars for the upper manual are arranged in the same fashion as those on all other models of the Hammond Organ, but because of the somewhat different playing range of the lower manual on the Spinet Model, the drawbars controlling the lower manual have been slightly modified.

#### HARMONIC DRAWBARS on other models (below)

On other models of the Hammond Organ, there are two sets of "harmonic drawbars" for each manual, each containing nine drawbars which are the same as those controlling the upper manual of the Spinet Model. There are two brown drawbars controlling the pedals. Basically, all sets of drawbars in all Hammond Organs are the same, each providing one drawbar for the fundamental and a number of additional drawbars for the harmonics. Thus when you become familiar with any one Hammond Organ you can readily play any of the many, many thousands of Hammond Organs in churches, schools, homes and public places.



# Tone Colors...blended as an artist blends colors



## What Are the Harmonic Drawbars?

When, for the first time, you sit down at a Hammond Organ, you immediately notice that it has two manuals, or keyboards, as well as a pedal keyboard. Only an organ with two manuals and a pedal keyboard can be called a *complete organ*, since all real organ music requires one manual on which to play melodies, a second manual for accompaniments and a pedal keyboard to provide the deep sustaining tones which add so much richness to organ music.

On the Hammond Organ you will also find various controls, such as the Vibrato and Vibrato Chorus, which we'll explain later. Each two-manual Hammond Organ also has a number of "harmonic drawbars", an exclusive feature which distinguishes the Hammond Organ from every other instrument in the world. Thousands of users, including many of the world's greatest musicians, have expressed the opinion that these harmonic drawbars give the Hammond Organ advantages never even approached by any other instrument.

As you look at the harmonic drawbars, you will notice that some of them are brown, some are white and some are black. You will also notice that they are in groups—two groups on the Spinet Model Hammond Organ and four groups on other models. Each group is related to either the upper or lower manual of the organ, as shown in the diagrams on the opposite page.

You will note that there is also a single brown drawbar assigned to the pedal keyboard of the Spinet Model,

and two brown drawbars controlling the pedals of other models of the Hammond Organ.

## How the Harmonic Drawbar System Works

To take the fullest advantage of the wonderful harmonic drawbar system of the Hammond Organ, it is necessary to understand what "music" really is. All sounds—musical or otherwise, are created by sending impulses or vibrations through the air. These are "felt" in the sensitive mechanism of our ears—a process we call "hearing". While you may think that you hear a single individual sound, actually each sound, or musical note, consists of a "fundamental" or basic tone, and a number of "harmonics" or overtones, the latter being different when the same note is played on different instruments.

For instance, when you play "A" above middle "C" on any instrument—organ, piano, violin or any other—you are creating a vibration at the rate of 440 impulses per second, provided of course that the instrument is in tune. This is known as the "fundamental" of this "A". However, the harmonics or overtones which accompany this fundamental of "A" on the piano would be quite different from those you would hear if you played the same note on, say, a violin or any other instrument. These different harmonics are created by a combination of differences in the materials and shape of the instrument, and the manner of playing.

Now, then, it is apparent that if you have available a source of sound which will provide the fundamental

# Tonal Resources...many thousands of lovely tones



sound of each note on the keyboard, plus a source of a large number of harmonics, you are in a position to combine these fundamentals and harmonics into musical tones similar to those of almost any instrument you can name. And that is just what the harmonic drawbar system of the Hammond Organ does for you. The first white drawbar in any group of Hammond drawbars provides the fundamental of every note on the manual controlled by that set of drawbars. The rest of the drawbars provide harmonics, or "overtones", and in some cases, sub-octave tones, in such a way that you can instantly combine the drawbars into many thousands of beautiful tone colors.

## Advantages of the Harmonic Drawbar System

The harmonic drawbars make the Hammond Organ the only instrument in the world on which you can mix beautiful tone colors as an artist mixes the paints on his palette. Instead of giving you a limited number of already-mixed tones which would be all you could ever play on the organ, the Hammond Organ gives you the ingredients for creating any of the standard tone effects you may want, plus thousands of other interesting tone colors which may be variations of the standard tones or entirely different.

## Pre-Set Keys

For the sake of convenience in playing the most frequently used church tones, some models of the Hammond Organ have eighteen "pre-set keys" which are com-

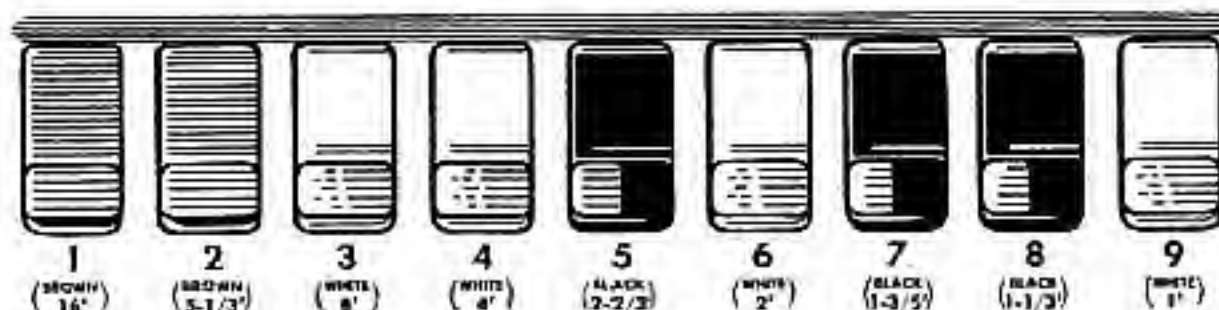
parable to the combination pistons of other organs. However, although these eighteen pre-set combinations represent more than the number of "voices" available on many other organs, they are only a "drop in the bucket" as far as the tonal resources of the Hammond Organ are concerned. And even these pre-set combinations can be readily changed if the user wishes.

## What the Harmonic Drawbar System Means to You

It means that instead of having a number of "stops" labelled, for instance, "diapason", "flute", "strings", "trumper", etc., the drawbar system of the Hammond Organ gives you the fundamentals and harmonics from which you can easily create all of these effects and thousands more. Instead of one trumpet tone, for instance, you have dozens of trumpet tones at your fingertips—some soft and distant, some brilliant and commanding, all kinds of trumpets! Do you want the rich, solemn tones of a church organ? Hundreds of beautiful combinations are available on the Hammond Organ and are used constantly in over 35,000 churches, large and small. Perhaps you prefer the tonal effects of early German organs or, in contrast, those of the theatre organ? You can achieve them on any Hammond Organ through variations in the "registrations" you set up on the harmonic drawbars.

Let's go to the next page and show you how easily it's done... and what a thrilling adventure in music it is!

## THE HARMONIC DRAWBARS in closed position



Here is one group of drawbars. There are two such groups on the Spinet Organ and four such groups on other models. All Hammond Organ drawbar groups consist of the same nine drawbars in the same sequence except for a slight difference in the first group on the Spinet Organ. Thus when you become familiar with one group of drawbars you are immediately at home with them all.

### Colors of Drawbars

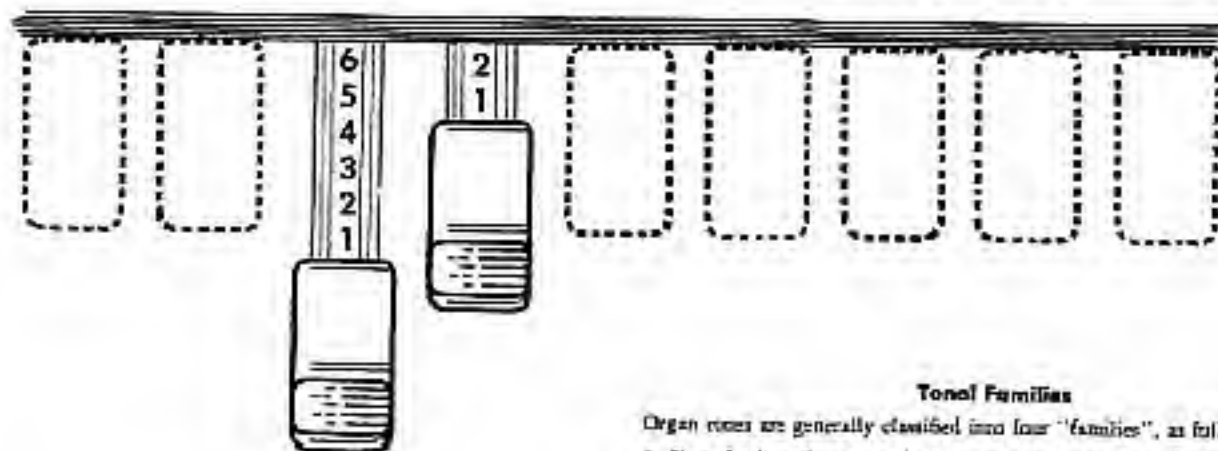
Under the nine drawbars above we have indicated their actual colors—you will note that some are white, some are black and some are brown. These colors will help you to recognize the character of each drawbar instantly. For the moment, let's skip the first two drawbars, which are brown, and concentrate on the third drawbar, which is white. The first white drawbar gives you the *fundamental* of any note you play on the manuals, and can be used in any one

of eight different positions or degrees, or of course can be left in "off" position. The other white drawbars in the group—numbers 4, 6 and 9, represent octave or "consonant" harmonics—that is, each is one octave above the preceding white drawbar. The three black drawbars, numbers 5, 7 and 8, being in harmonics which fall between the octaves and are called "dissonant". Now to go back to drawbars number 1 and 2—the first is an octave below the fundamental and the second is a fifth above the fundamental.

### Other Identification

You will note that the fundamental drawbar is marked "8'" and the sub-fundamental (one octave below) is marked "16'". This is pipe organ terminology and means that the pipe used to produce the fundamental note on a pipe organ is actually eight feet high (for the lowest key on the manual) while that used for the octave *below* is sixteen feet high and that for the octave *above* is only half the size of the fundamental, or four feet high. Now let's turn the page and see how to use our drawbars!

## FLUTE TONE—00 6200 000—heavy "doppel" type



The drawbar system of the Hammond Organ permits you to produce many thousands of beautiful tones, both organ and orchestral. In order to quickly become familiar with these tones it is helpful to group them into "families", because obviously tones which are of the same type must resemble each other in tonal structure. This process also makes it easy to select the type of tone you want when playing old music printed before the Hammond Organ was introduced and therefore carrying only pipe organ registrations, or when playing hymns, many of which have no organ registrations.

### Tonal Families

Organ tones are generally classified into four "families", as follows:

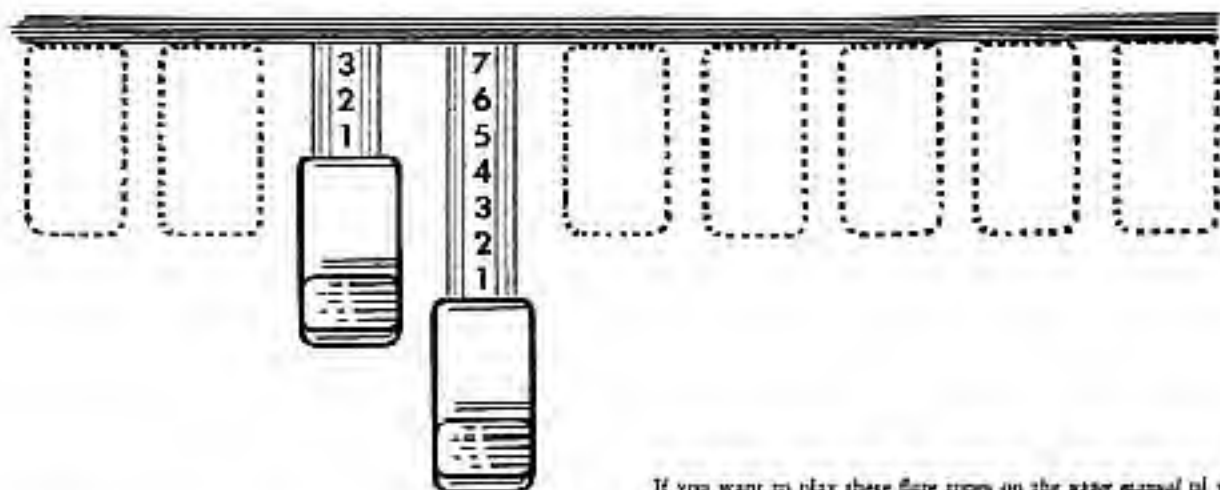
1. **Flute**, both orchestral and organ, which include piccolo, melody, flûta, and many others.
2. **Reed**, including the brasses, trumpet, trombone, clarinet, bugle, bassoon, vox humana, cornet, French horn, English horn, saxophone, tuba, oboe, etc.
3. **Foundation**, including all "diapason" tones, both "open" and "stopped".
4. **String**, both orchestral and organ, such as violin, cello, arpeggio, dulciana, gamba, gemshorn, viola, salicional and voix celeste.

### One of Many Flute Tones

Of the four groups above, the flute tones represent the simplest harmonic development, using chiefly the fundamental (first white drawbar) and the octave harmonic (second white drawbar) with occasional use of a very small amount of the first black drawbar. The relative proportions of these harmonics vary for the different kinds of flutes. If you have a Hammond Organ available, it is suggested that you set up the one illustrated above, then try the one on the next page. Of course, you "set up" the registrations by pulling the drawbars indicated out to the positions shown.



## ANOTHER FLUTE TONE—00 3700 000—light concert type



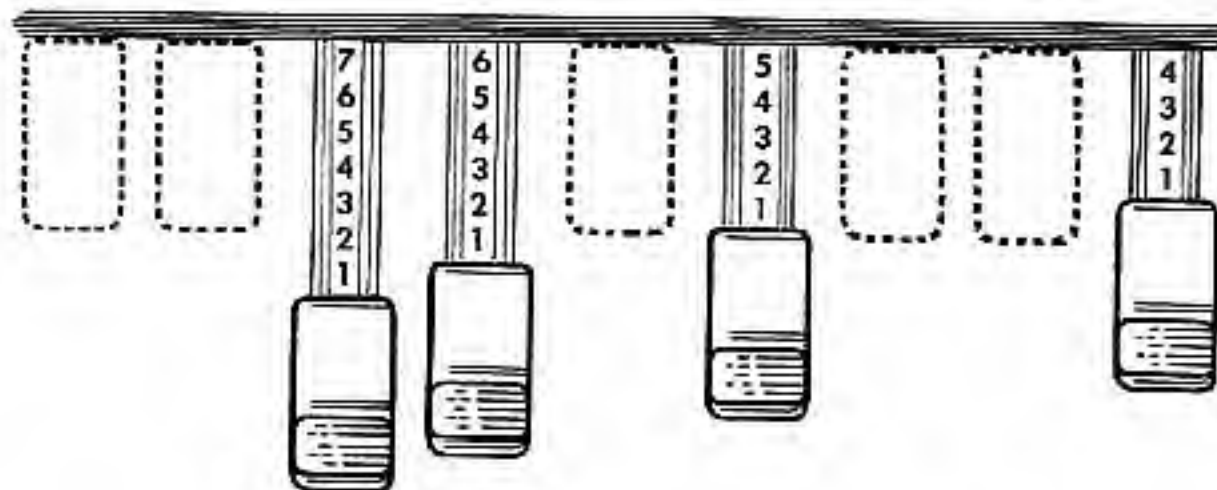
There are literally hundreds of flute tones available on the Hammond Organ, in contrast to any other type of organ on which you can play only the one or perhaps two or three which are set up at the factory. For instance, on the previous page you discovered how to produce a heavy type of flute with registration 00 6200 000. Now, by simply changing the relative positions of the 3rd and 4th drawbars to 00 3700 000 as shown above, you can create a light concert type of flute. Or by closing the 4th drawbar altogether and adding a little of the 5th drawbar plus a heavier fundamental, you can get a solo type tibia — 00 8020 000. This should be used with vibrato No. 3.

If you want to play these flute tones on the *upper manual* of your Hammond Organ, you "set them up" either on the *second group* of drawbars on a *Spinner Model* or on the *first or second group* on other models. There is no difference between these groups of drawbars—the only reason for providing two groups instead of one for each manual on certain models of the Hammond Organ is so that you can have several of your favorite combinations ready and waiting for use.

### Pre-Set Keys

With two groups of drawbars for each manual, however, it becomes necessary to have control keys so that you can select the group you want. The first group of drawbars for each manual is therefore controlled by the A# pre-set key on that manual (the pre-set keys are those which are reversed in color) and can be played only when that pre-set key is depressed, while the second group comes in when you depress the B pre-set key. If no pre-set key is depressed the manual will not sound when played. Since the *Spinner Model* does not use pre-set keys, it is only necessary to arrange your drawbar combinations and begin to play (assuming of course that the organ is turned on). See page 23 for chart of pre-set registrations.

## MORE FLUTE TONES—00 7605 004—several flutes together



The effect of many flute tones sounding at different pitches ( $B'$ ,  $A'$ ,  $G'$  and  $F'$ ) may be secured by using all the white drawbars simultaneously. For example, try the registration above with no vibrato. You can also get the effect of a "sub-octave coupler" (adding the sub-octave) by adding the first brown drawbar to the registration, giving you 70 7605 004. Try this registration without vibrato, then try it with full vibrato. While the latter is not an "orthodox" flute tone, it is a beautiful and useful effect.

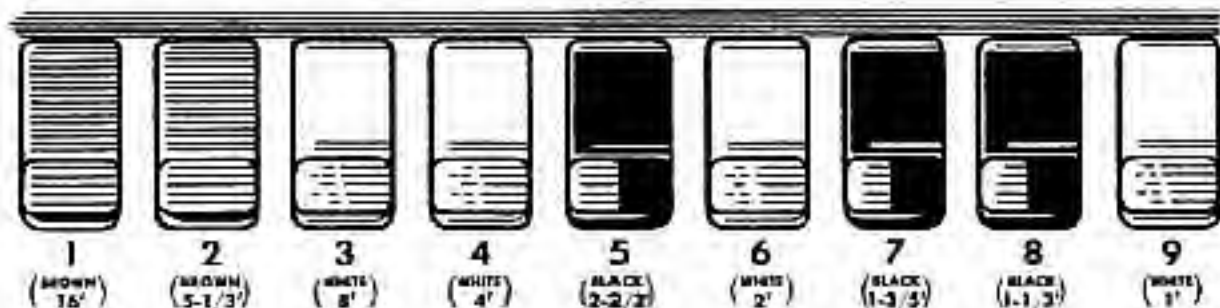
### Grouping of Numbers

You will note that the "registration" above consists of a row of numbers arranged in three groups. The first number means the first drawbar, the second number the second drawbar, etc., and each number indicates the position to which that drawbar should be drawn.

It has become customary to separate these nine numbers into groups as shown above for convenience in reading and setting them up, and also because the arrangement is related to the character of the drawbars. You will note that the first two numbers are grouped separately and that they correspond to the two brown drawbars. The next numbers represent the "center group" with which the character of the tone is established, and the last three numbers are "endings". It is interesting to note that these endings are missing altogether in many combinations and almost always tend to "taper off" when they are used, in the same way as do the upper harmonics of the tone itself.



## HARMONIC DRAWBARS RETURNED TO CLOSED POSITION



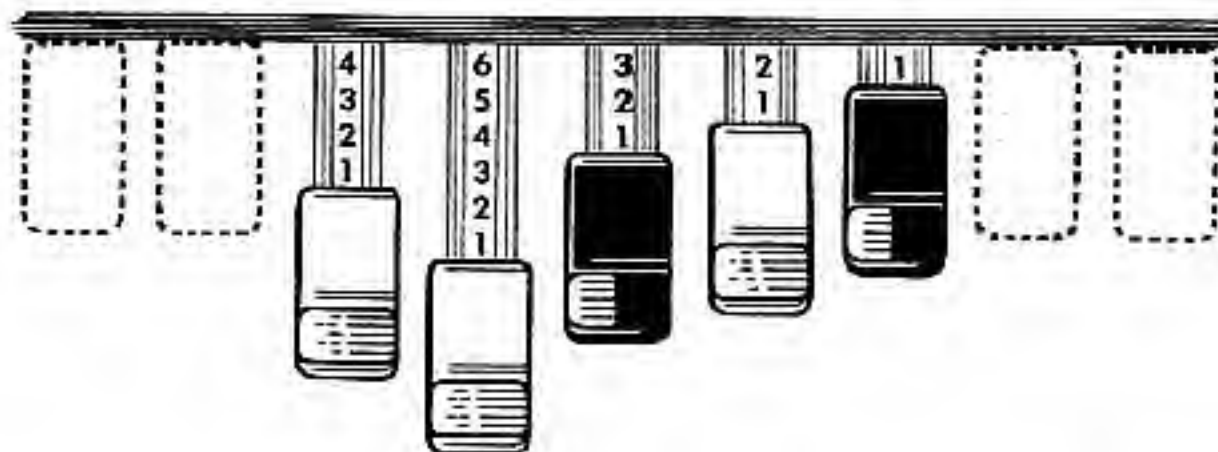
You have seen how certain of the drawbars can be combined to produce many beautiful flute effects on the Hammond Organ, and will find as you experiment that you can create hundreds more. Also, you will come to prefer certain flute tones for various selections, so it is suggested that as you determine the tones you like best, you start entering them in a "little black book" under the heading of "flute tones". Good organists usually prize their little books greatly, and exchange combinations with other organists whenever the opportunity arises. Many thousands of such registrations are also available in print, but in addition to these most players also enjoy creating their own and improving upon those they discover.

### Reed Tones

Now the drawbars, as shown above, are back in their closed position, and we will see how you go about producing some of the thousands of rich reed effects which add so much to both organ and orchestral music. The reeds are more brilliant and more numerous than any other group, and many are used as solo stops rather than as accompaniments because of their strong personalities.

While, as you have seen, the flutes concentrate their harmonic development chiefly on the fundamental and second white drawbars, the reeds are characterized by heavy upper harmonic development. In fact, reed tones often have upper harmonic development as great as that of the fundamental and second white drawbar. Let's look at the next page!

## TYPICAL REED EFFECT — 00 4632 100 — oboe effect

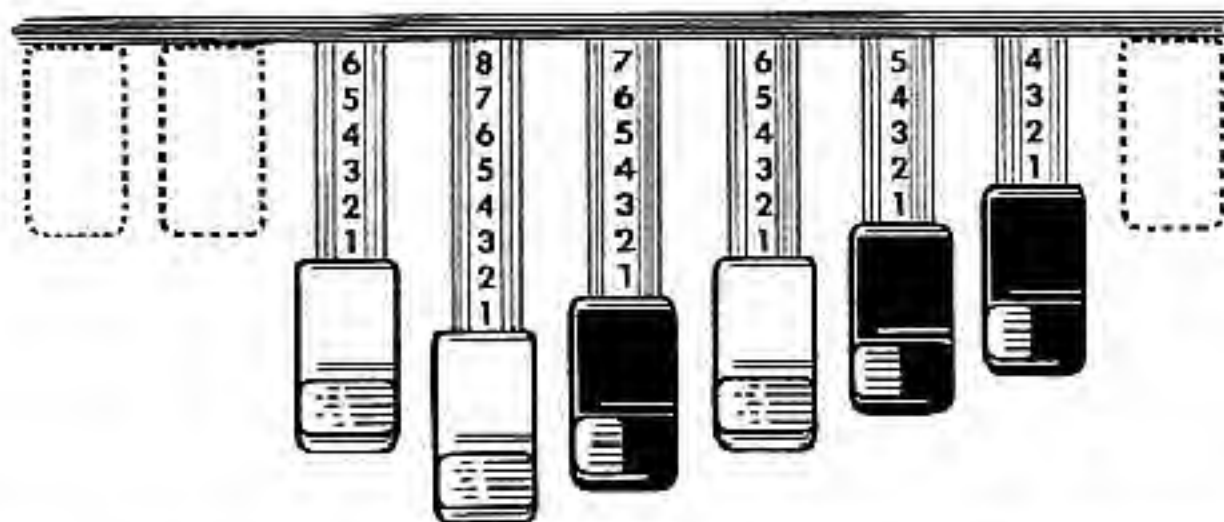


The reed tones of the organ are very numerous, as they include the brasses and the woodwinds, the tones of the latter instruments being created by vibrating reeds. The oboe type is a typical reed, with emphasis on the drawbars in the middle of the group and with nearly as much of the first black drawbar as of the fundamental itself. In fact, use of this first black drawbar is characteristic of many reed registrations and creates a "triangle" pattern that is very easy to remember. Used in a less powerful registration, 00 2333 200, this triangle pattern is a useful accompaniment tone on the lower manual.

### Softer Registrations

You will note that the softer reed arrangement just mentioned is not an exact halving of the powerful reed given first. It is desirable to remember that all tonal combinations, like color combinations, are a matter of proportion, and that sometimes it is not possible to divide the elements of tones exactly. For instance, if you were using a registration such as 00 6420 000 you could reduce it to 00 3210 000 and you would have the same tonal effect except that it would be less powerful. You cannot, however, reduce 00 6420 000 by one degree in each drawbar, making it 00 3310 000, and expect to retain the character of the tone, because you have changed the proportions of the fundamental and the harmonics and therefore have quite a different tone. If you want to play a certain solo combination softly, it is often better to *increase* the volume of the registration used for accompaniment and then control the volume of the entire organ by the use of the "swell" or "expression" pedal.

## A CHORUS REED TONE—00 6876 540—trumpet type



The chief characteristic of chorus reed quality is its heavy upper harmonic development, which may equal the fundamental and the 4th drawbar in intensity. A good example of this is the trumpet type of tone set up on the drawbars above. This should be used without vibrato.

### Exact Shades of Tone

However, it might happen that the trumpet quality above is not exactly the tone you have in mind. If you were playing on an organ on which all the "stops" had been set up at the factory, you would have to be satisfied with it.

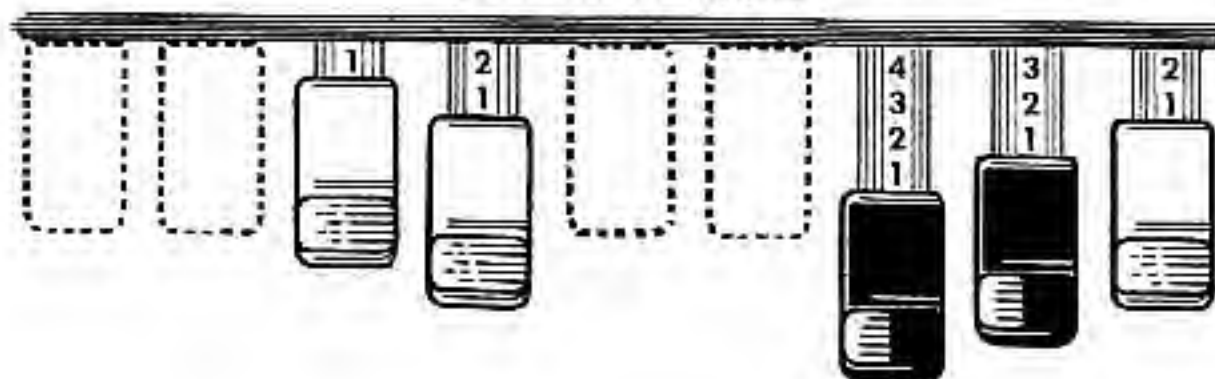
The Hammond Organ, however, allows you not only to set up any tonal effect you want, but also to make many fine variations of the tone. Only on the Hammond Organ can you play exactly the shade of tone you want for every selection and, perhaps even more important, for every enclosure in which you play.

The matter of the right shade of tone for every enclosure is very important, because the acoustics of the room in which you play have much to do with the beauty of your music. So important is this matter of acoustics that expensive custom-built organs are "voiced" after they are installed in order to adapt the tone of the pipes to the acoustics of the church or hall.

With the Hammond Organ, a touch of a finger is all that is needed to make the tone quality softer or more brilliant, richer in one harmonic or another, in fact, exactly right. Great musicians declare this to be one of the most wonderful of the many exclusive features of the Hammond Organ.

## A LIGHT REED TONE—00 1200 432—vox humana effect

(Use with Vibrato No. 3—see page 21)



The delicate vox humana effect is as different as day and night from the heavy chorus reed tone you have just tried on the previous page, but it illustrates the tremendous variety of effects available on the Hammond Organ.

Quite a contrast to the vox humana effect, and yet entirely different from the heavy chorus reed effect, is the group of lighter solo instrumental tones you can produce on the Hammond Organ. For instance, try 00 7272 420 with Vibrato No. 1 and you will find that you have a beautiful clarinet tone.

### Using Black Drawbars

You will have noticed that the clarinet tone just mentioned contains a very large proportion of the 5th drawbar, which is the first of the "dissonant"

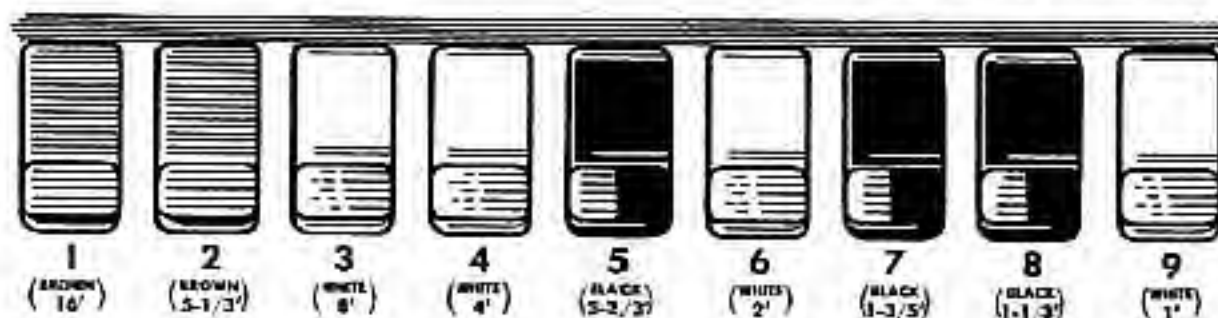
harmonics. When a single-note melody is played using such a "solo" instrumental effect, the results are musically pleasing. However, such registrations should be modified when used to play chords, particularly those below middle C. This is because the great amount of a dissonant harmonic tone, when multiplied by the three or four notes of the chord, become too dominant. Therefore, if you wish to use this type of registration for chords, it is well to slightly decrease the amount of the black drawbars and to slightly increase the amount of the adjacent white drawbars.

As a general rule, it is well never to draw a black drawbar out further than the adjacent white drawbars except for certain solo and novelty effects, and these should be used with care.

### Chorus Reed Effect with Sub-Octave

As a further illustration of the chorus reed effects, here is a really heavy one with sub-octave added—76 7777 765. Try this with Vibrato Chorus No. 3.

## HARMONIC DRAWBARS RETURNED TO CLOSED POSITION



In the previous pages you have seen how, starting from the drawbars in closed position, you set up the registrations which give you the qualities characteristic of the flute family and of the reed family of tones. The third of the four families of organ tones is the foundation group, which includes all the various "diapason" tone qualities found in no instrument but the organ. Some of these "diapasons" are known as "stopped" and some are called "open". Like the designation of pitch by feet—4', 8', 16', etc.—these terms are inherited from the pipe organ and indicate the type of pipe used to produce the tone on that instrument.

### Foundation Tones

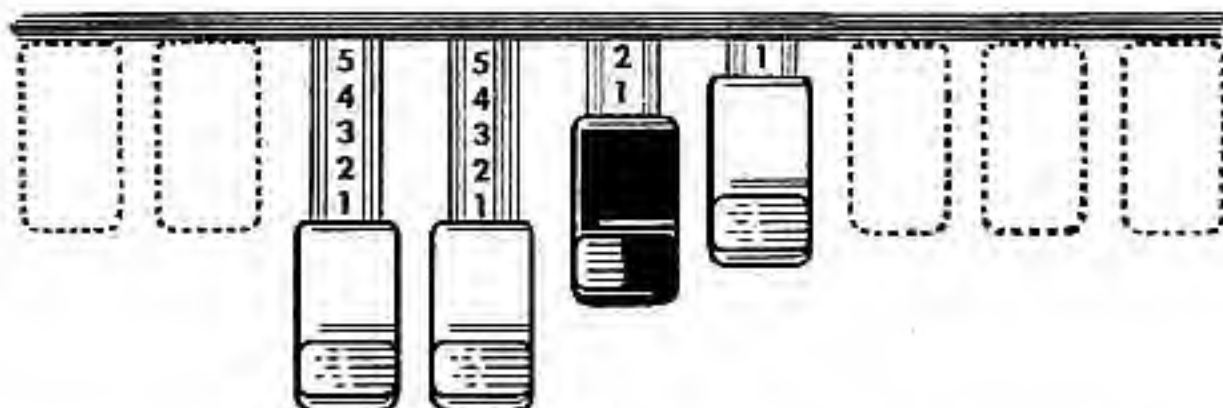
These tones have a distinctive organ quality and do not imitate any orchestral instrument. As a rule, they are heavy and dull rather than brilliant in quality,

which makes them suitable for playing chords—they are much used for accompaniment on the lower manual. They are also especially good for accompanying the human voice where a background effect is desirable.

There are many "16-foot" diapason effects, and these make use of the two brown drawbars at the left of each group (except in the group for the lower manual of the Spinet Model). The first of these brown drawbars adds the harmonic that is one octave down from the fundamental and the second brown drawbar adds the sub-octave of the third harmonic (the first black drawbar). The two brown drawbars are purposely different in color from the others and are positioned together because they are most often used together in "16-foot" registrations.

On the next page you will find one of many diapason effects, as well as a typical "16-foot" effect. In addition to straight diapason and sub-octave diapason effects, there are also many variations of these foundation tones, including such effects as bell diapason, violin diapason, flute diapason, etc.

## FOUNDATION TONE—00 5521 000—phonon type diapason



All diapason tones are characterized by a strong fundamental and second harmonic with relatively weak upper harmonics. There is much disagreement among professional organists as to what constitutes a "good diapason", perhaps because of the fact that diapason tones are more affected by good or bad acoustics than are the tones of more pronounced character, and the registration that is good in one location may not be satisfactory in another. The "phonon" type of diapason, for which a suggested registration is given above, was developed on pipe organs by designers who wanted to produce a soft, fluty type of diapason or foundation tone.

In discussing tone as a structure, it may be said that the diapason tones lie between the flute tones, which are almost devoid of upper harmonics, and the string tones (to be dis-

cussed later) which are characterized by strong upper harmonic development.

### "Diapason Chorus"

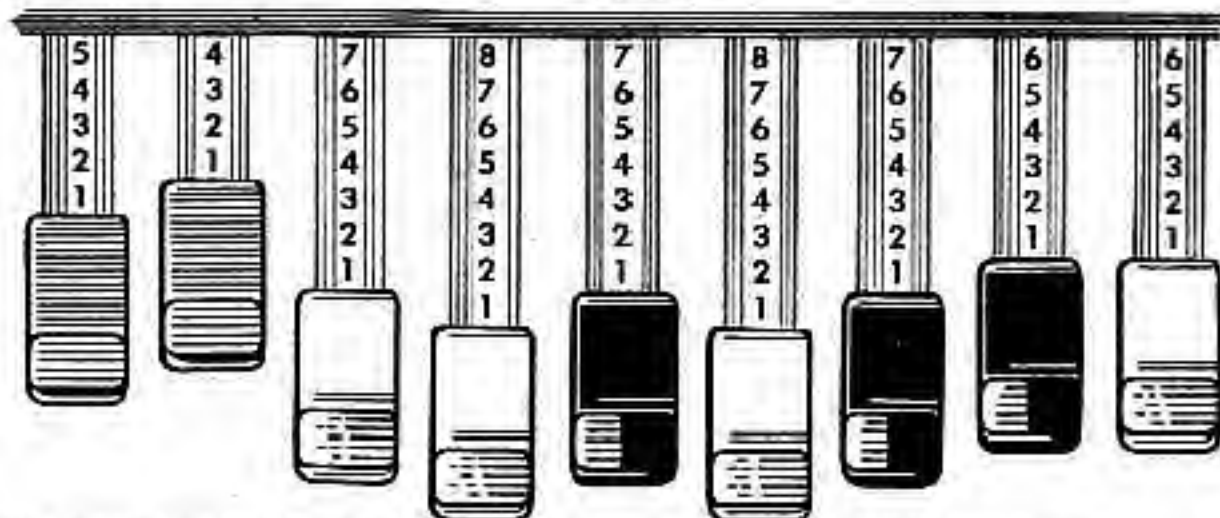
Adding the brown drawbars and the upper harmonics gives you a diapason chorus effect with a sub-octave tone added. Try 54 5444 222 on the upper manual both as an accompaniment and for solos; do not use any vibrato or chorus effects with diapason registrations as they sound more church-like without it.

Registrations which use the two brown drawbars (sub-octaves of the fundamental and third harmonics) are often very rich and beautiful when played an octave higher than written in your music, especially on the upper manual.



# FOUNDATION TONE—54 7878 766—full organ effect

(No Vibrato)



"Full organ" registrations are similar to those for the most powerful diapason tones, as "full organ" on an organ with factory-set stops is, of course, a combination of all the tones available on the organ. A full organ registration tends somewhat to a reed effect because the reed tones are the most prominent single "voices" of the organ and overshadow the softer flutes and strings when all the tones are combined.

Do not make the mistake of pulling all the drawbars all the way out with the idea that you will get a bigger "full organ". Actually you will get a tone which cannot be identified as that of any type of instrument or group of instruments, since you will have exactly the same setting of the fundamental and of each of the harmonics, and the resultant tone

will be too "bright" for most purposes.

## Adding Registrations

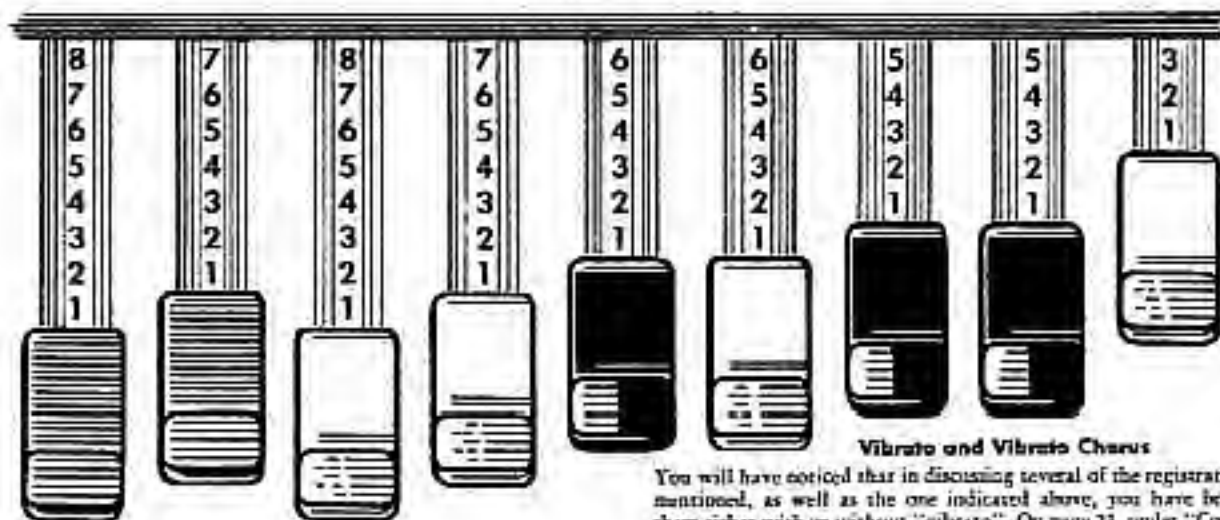
Just as the full organ effect is achieved by adding the "voices" of the organ together, you can very easily combine any tones you wish on the Hammond Organ. Let's say that you want to combine the following:

01 6788 540  
00 8210 000  
00 1354 321

In order to get a registration which will sound as if all three of these tones are being played together, you take the largest figure for each drawbar, making the result 01 6788 541.

# FOUNDATION TONE—87 8766 553—full theatre organ

(Vibrato No. 3)



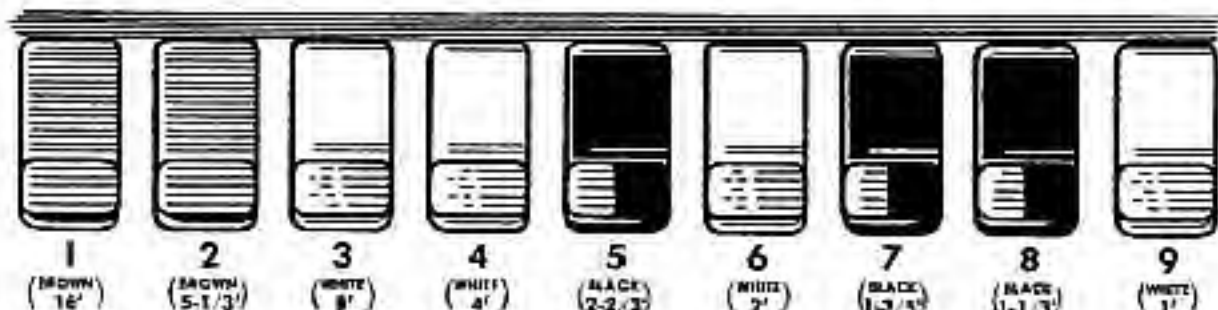
**Vibrato and Vibrato Chorus**

The installation of large pipe organs in many of America's leading theatres, especially in the days of the silent motion pictures, brought about a type of registration and style of playing which became known as "theatre organ". Characterized by open harmony and use of glissandos, this style of playing is now widely used for home and entertainment music, including radio and television broadcasting. Since the harmonic drawbars on your Hammond Organ permit you to create not only tones, but exact shades of tone, you can as readily play theatre organ effects as you can church organ tones—and all on the same instrument.

You will have noticed that in discussing several of the registrations previously mentioned, as well as the one indicated above, you have been told to use them either with or without "vibrato". On page 22, under "Control Tablets", you will find a description of the wonderful Hammond Vibrato and Vibrato Chorus, which when made available on the Hammond Organ a few years ago was hailed as "the greatest advance in organ music since the introduction of the Hammond Organ itself". In the meantime, you may want to know why the exclusive Hammond Vibrato does so much for your music.

Many musical tones are much more pleasing with some degree of "vibrato". The great emotional appeal of a true vibrato is known to all musicians—the moving power of the violin in the hands of a master, for instance, is due in no small measure to his ability to impart a beautiful vibrato to his playing. In the past, vibrato effects were imitated on the organ through the use of a tremulant, which causes the sound to vary in volume. A true vibrato, however, is a frequent, regular variation in the pitch of a musical note, as on the violin. The Hammond Vibrato is true in pitch on every note, is instantly controllable, and adds greatly increased richness, enhanced emotional appeal and vast new resources to the Hammond Organ.

## HARMONIC DRAWBARS RETURNED TO CLOSED POSITION



You have seen how the harmonic drawbars of the Hammond Organ make it possible for you to produce thousands of beautiful tones which belong to three of the tonal families of the organ—flute, reed and foundation. The fourth and last of these “organ family” groups is the string tones, both organ and orchestral.

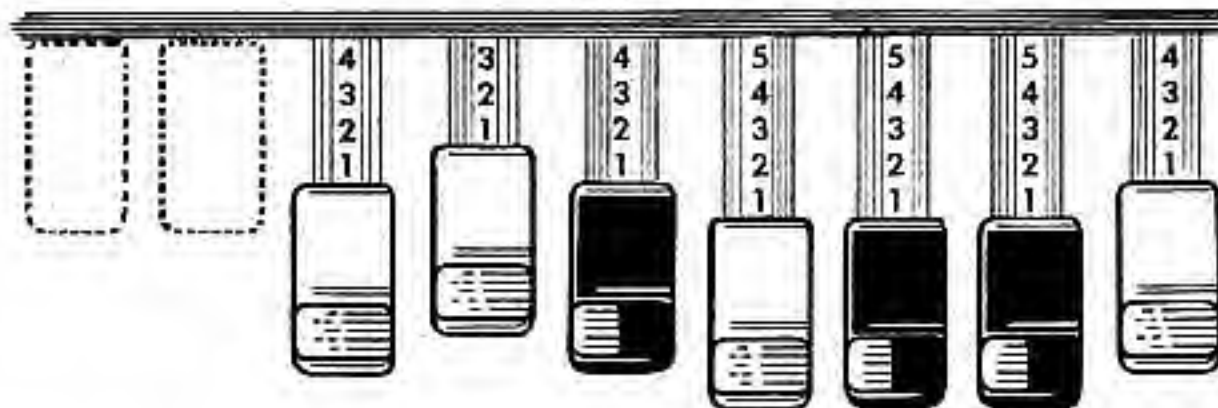
String tone qualities are characterized by especially strong upper harmonic development. The fundamental and second harmonic may be relatively weak, which is the exact opposite of the harmonic structure of the flutes, as you will remember. To help you remember the outstanding characteristics of the four tone families, we are enumerating them here, although you should keep in mind the fact that these are simply generalizations with thousands of possible variations:

1. **Flute family** — chiefly fundamental and 2nd white drawbar, occasional small use of 1st black drawbar.
2. **Reed family** — emphasis on middle drawbars, often with more of 1st black drawbar than of the fundamental itself.
3. **Foundation family** — strong fundamental and 2nd white drawbar, relatively weak upper harmonics.
4. **String family** — relatively weak fundamental and 2nd white drawbar; strong upper harmonics.

These are the generalities which apply to the tonal resources of the organ, and in themselves produce pleasant and usable effects. However, real beauty of tone is secured in two ways—the first is the use of registrations which have been worked out by fine organists, such as those published on much organ music. The second—and eventually the one that best expresses your own feeling for the music—is to create your own tonal effects, trying out and perfecting the tones with which you play your favorite selections and marking your music with those you like best. Don't, however, always play the same selection with the same registrations; you can play each piece in hundreds of different ways on the Hammond Organ.

## A STRING TONE—00 4345 554—violin type string

(Vibrator No. 3)



There are many hundreds of possible string tone registrations, and every string tone can be made either "dull" or "bright" by varying the amount of the upper harmonics. In fact, the string tones are considered the most versatile of the four tone families of the organ. They can be soft or loud, single strings or groups, and are used both as solo registrations and as accompaniments.

### Use Correct Volume and Range

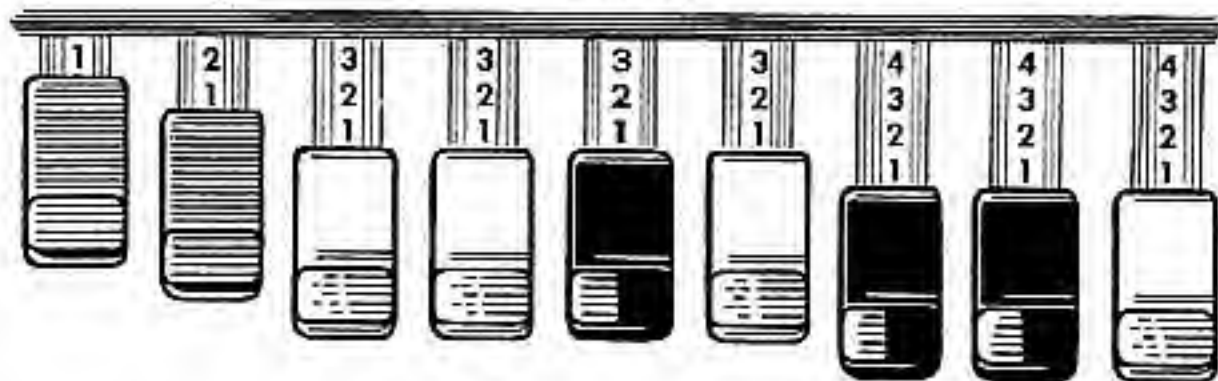
It is well to keep in mind that all organ tones are characterized not only by their individual harmonics but by the loudness with which they are played and the range in which they are used. String tones, for instance, should be played softly. You cannot open the expression pedal so that a string registration sounds as loud as a tuba and expect it to sound like a string! If you play a violin registration low on the keyboard it may be beautiful but it will not

sound like a violin. Here are some suggestions for the range in which to play various instrumental effects, counting the lowest octave on the keyboard as 1, the second octave as 2, etc.:

Clarinets	2nd and 3rd octaves
French horn	2nd and 3rd octaves
Muted horn	2nd octave
Trumpet	2nd and 3rd octaves
Orchestral oboe	1st, 2nd and 3rd octaves
English horn	2nd and 3rd octaves
Flute	Entire Range
Tibia	3rd, 4th and 5th octaves
Orchestral flute	3rd, 4th and 5th octaves
Groove flute	3rd and 4th octaves
Flute 8' & strings	Entire Range
Flute 16' & strings	3rd, 4th and 5th octaves
Oriental tone	2nd and 4th octaves

## A STRING TONE—12 3333 444—string chorus effect

[Vibrato No. 3]



Here is the effect of many strings, such as you hear when listening to the string section of an orchestra. Of course, you can build hundreds of string ensembles on the Hammond Organ, and also vary their effect by playing either single notes or chords, and by the part of the keyboard on which you play them.

### Both Hands on Same Manual

Another easy way to get pleasing changes on the organ is to play suitable passages with both hands on either the upper or lower manual, or occasionally to use the left hand on the upper manual and the right on the lower.

### Pedal Drawbars

The pedal tones of the Spinnet Model Hammond Organ are controlled by the single brown drawbar that is located between the drawbar group for the lower manual and the drawbar group for the upper manual. This controls an already-

combined tone which you set to a volume that balances well with the volume of the manuals, taking into consideration the acoustics of the room in which you are playing.

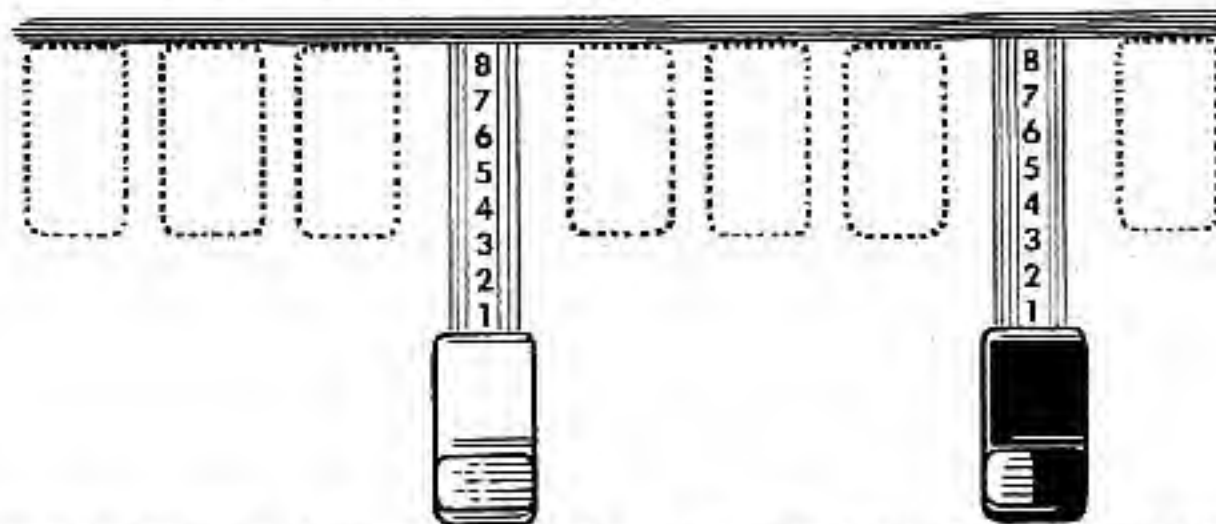
On other models of the Hammond Organ there are two pedal drawbars, the first drawbar controlling a rich combination of the fundamental at 16 ft. pitch, the 2nd and 3rd harmonics, and the second drawbar controlling the upper harmonics for added brightness. Each of the pedal drawbars on all Hammond Organs has eight positions (and "off") to provide a considerable choice of combinations and range of volume.

### Balance of Tones

It is very important that proper balance be maintained between the melody and the harmony, and between the pedals and the manuals. The melody must, of course, always stand out clearly against the harmony, but not so sharply that they are dissociated. The pedals should be loud enough to be clearly heard but never so loud as to overshadow the tones of the manuals. All music registered for the Hammond Organ gives pedal registrations, but since acoustics often muffle the deep tones of the pedals it is desirable to listen carefully to the ensemble and correct it yourself when necessary.

## NOVEL SOLO EFFECT—00 0800 080—xylophone

(No Vibrato)



In addition to the four families of organ tone—flute, reed, foundation and strings—the Hammond Organ can reproduce the tones of many instruments not available on any other organ. While these may not be desired for the playing of classical organ literature, they can be very interesting and piquant for other types of music. For instance, by playing the registration above in a staccato manner you can get the effect of a xylophone; do not use any vibrato.

### New Tone Qualities

Because of the fact that in the Hammond Organ any harmonic may be developed independently of the other harmonics, many unusual and striking effects can be developed. Any harmonic may be emphasized individually,

or on the other hand, eliminated completely. Even the fundamental may be eliminated. These unfamiliar harmonic absences or exaggerations make such interesting tonal combinations as 00 0261 111 or 00 1426 030, and many others.

### Conclusion

This booklet has, of necessity, dealt rather briefly with the subject of the Hammond drawbars. However, it should serve to give the organist an idea of the vast tonal resources of the Hammond Organ. Within each tone family you will be able to discover for yourself an almost unlimited variety of qualities which appeal to you. You are not limited to a relatively few "stops" in each tonal family, but may create for yourself myriad fine shadings of tone which you like best and which best suit the place in which you play. While the Hammond Organ has many other exclusive advantages, the tremendous versatility of tone provided by the harmonic drawbars is the feature which makes it the choice of organists who want to most effectively express their own individualities.